អ្នកជំនាញខាងជាណកសាស្ត្រឥណ្ឌូចិន
The Indochina Entomologist
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OPEN ACCESS
New Record
ICE, 2 (15): 147–151 (2026)
ISSN (Online) 3065-1107
www.indochinaentomologist.com

https://doi.org/10.70590/ice.2026.02.15
http://zoobank.org/urn:lsid:zoobank.org:pub:80710DA3-27D5-474D-90DC-F11626F154A1

New discovery of *Ambulyx zhejiangensis* Brechlin, 2009 from Shaanxi, China (Lepidoptera, Sphingidae)

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Abstract: *Ambulyx zhejiangensis* Brechlin, 2009, one of the rarest species in Smerinthinae, genus *Ambulyx* Westwood, 1847 of China, is newly recorded from Shaanxi (Ningshan County, Ankang), China. In this study, we discuss its distribution and similar species, provide a brief description and habitat information, and present the female genitalia for the first time.

Keywords: new record, Shaanxi Province, Sphingidae, taxonomy

浙江鹰翅天蛾之陕西省新纪录及其讨论（鳞翅目：天蛾科）

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摘要：本文报道产于陕西省安康市的一天蛾科省级新纪录种——目天蛾亚科 Smerinthinae 的浙江鹰翅天蛾 *Ambulyx zhejiangensis* Brechlin, 2009。该种是中国最罕见的鹰翅天蛾属种类，本文对其分布和近似种类进行了讨论，附简要描述、分类特征图与生境图，同时首次给出了该种的雌性生殖器解剖图。

关键词：新纪录，陕西省，天蛾科，分类学

Citation: Tong S-Y, Jiang Z-H & Wang J-X 2026: New discovery of *Ambulyx zhejiangensis* Brechlin, 2009 from Shaanxi, China (Lepidoptera, Sphingidae). *The Indochina Entomologist*, 2 (15): 147–151. [童诗宇, 蒋卓衡 & 王嘉鑫 2026: 浙江鹰翅天蛾之陕西省新纪录及其讨论（鳞翅目：天蛾科）. 中南半岛昆虫学家, 2 (15): 147–151.]
https://doi.org/10.70590/ice.2026.02.15

Accepted by Cheng-Bin WANG: 16.III.2026; published online: 23.III.2026

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Introduction

Ambulyx zhejiangensis Brechlin, 2009 is one of the rarest species in genus *Amubulyx* Westwood, 1847 from east and central China (Chongqing, Hubei, Zhejiang) (Jiang et *al.* 2025). In this paper, we collected a female from Ningshan County, Ankang, Shaanxi in June of 2025, which area is close to Hubei Province and Chongqing. The terrain in this area gradually descends from the southeast and northwest toward the center, exhibiting a sloping trend from southwest to northeast. This area belongs to the subtropical monsoon climate zone with warm and humid climate, distinct seasons and abundant rainfall, providing a suitable habitat for various creatures.

This new record of *Ambulyx zhejiangensis* Brechlin, 2009 not only showing the high biodiversity of Shaanxi Province but also refresh the possible northernmost range area of this rare species, showing that the biodiversity of hawkmoths in Shaanxi Province still needs further investigation in the future.

Material and methods

Voucher specimens examined in this study are deposited in the following collections:

JZHC: private collection of Zhuo-Heng Jiang, Kunming, China.

Habitus images were taken using a Canon 7D camera in conjunction with a Canon MP-E 65mm f/2.8 1-5X Macro Lens, and a Canon MT-24EX Macro Twin Lite Flash as a light source. Images of the genitalia were taken using a Canon G9 camera mounted on an Olympus CX31 microscope under reflection or transmission lighting. Zerene Stacker (version 1.04) was used for image stacking. All images were edited further using Adobe Photoshop CS6. The dissected genital structures are now stored in pure glycerol in a plastic centrifuge tube placed beside the specimen in the collection.

Taxonomy

Genus *Amubulyx* Westwood, 1847 鹰翅天蛾属

Ambulyx Westwood, 1847*, Cabinet orient. Ent.* 61.

Type species: *Sphinx substrigilis* Westwood, 1847.

Ambulyx zhejiangensis Brechlin, 2009 浙江鹰翅天蛾

Figs 1–2

Ambulyx zhejiangensis Brechlin, 2009, *Entomo-Satsphingia*, 2 (2): 50; **Type locality:** Yu-Shan-Wu, Anji County, Zhejian, China.

Material examined. CHINA: 1♀, Ningshan County (1440m), Ankang, Shaanxi, VII-2025, Shi-Yu Tong *leg.* [JZHC].

Diagnosis: Female (Fig. 1): Head and thorax in grey, with wide black patches and a V-shaped dorsal black patch; abdomen—upperside greyish. Forewing long, triangular with sharp apex, outer margin smooth, distal part of inner margin slightly concave; upperside ground colour brownish yellow with scattered black brown scales, subbasal black spot minute, subterminal line pale brown, straight and reaching the inner margin just basad of the tornus,with a line of yellow scales along its inner edge; underside—ground colour brownish-yellow, dotted with grey spots, marginal area greyish. Hindwing—upperside yellow with tiny brown spots, a brown curved line in the medial area and a brown zigzag line in the submarginal area, marginal area greyish-brown; underside color paler, pattern similar to that on the upperside.

Female genitalia (Fig. 2): Anal papillae rounded. Lamella antevaginalis sclerotized, with two lateral annular structures that fuse to the bases of the anterior apophyses. Ductus bursae tubular, membranous and long. Corpus bursae membranous and oval, signum “V” shaped, covered with tiny spinules.

FIGURE 1. Habitus of *Ambulyx zhejiangensis* Brechlin, 2009, ♀, Ningshan, Ankang, Shaanxi, China. Scale bar = 10 mm.

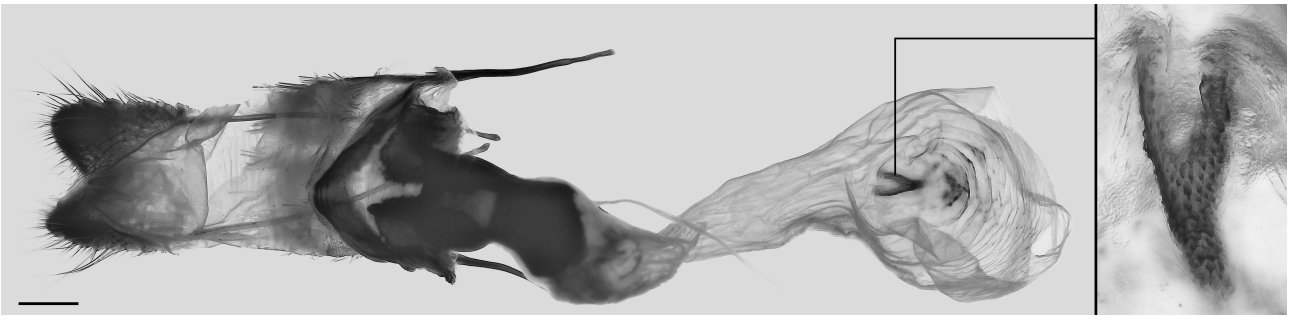

FIGURE 2. Female genitalia of *Ambulyx zhejiangensis* Brechlin, 2009, Ningshan, Ankang, Shaanxi, China. Scale bar = 1 mm.

Distribution: Currently known from SW. Shaanxi (Ankang), NE. Chongqing (Wuxi), N. Hubei and NW. Zhejiang (Anji) of China.

Biological notes: Adult were collected from millde elevation deciduous broad-leaved Forest (Fig. 3), attracted to light trap in the nighttime.

Remarks: *Ambulyx zhejiangensis* is one of the rarest *Ambulyx* species in China, with only a few specimens known: the holotype female from "Yu-Shan-Wu, Anji county, Zhejiang, China"; a female from the same locality as the holotype; a female from "Tapa Shan, China" (Hubei); a male without any information illustrated in original description; a male from Yasunori Kishida's (Japan) collection; and a male collected from Yintiaoling Nature Reserve, Chongqing, China (Jiang et al., 2025). *A. zhejiangensis* is similar to the sympatric *A. sericeipennis* (Bremer & Grey, 1853) which occurs in some area of central, east and south China. The currently known specimens of *A. zhejiangensis* are from Zhejiang, Hubei and Chongqing according to the authors field investigation and relible literature support, it may cover a greater area than these records suggest, south Shaanxi may be the northernmost boundary of is rare species but future studies should also focus on this taxon when more material is available.

Discussion

Ambulyx zhejiangensis is a typical montane habitat moth which ranged in C. and E. China. The newly discovery of the *Ambulyx zhejiangensis* in this study adds a valuable record to the diversity of Sphingidae in Shaanxi Province. Thus we recommend enhancing the survey and monitoring efforts of Sphingidae in Shaanxi Province and its surrounding areas. This will not only help us gain a more comprehensive understanding of the species, distribution,

and ecological habits of sphingidae, but also provide more detailed data support for related research and conservation efforts.

FIGURE 3. Habitat of *Ambulyx zhejiangensis* Brechlin, 2009, Anakng, Shaanxi, China.

Acknowledgements

We would like to express our sincere gratitude to Dr. Shao-Ji Hu (Yunnan University, Kunming, China) for his valuable comments.

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https://doi.org/10.3390/insects16030223

Additional information

Author contributions: Conceptualization, Z.-H.J.; Methodology, Z.-H.J. & S.-Y.T.; Resources, S.-Y.T.; Data curation, J.-X.W.,; Writing, S.-Y.T.; Visualization, Z.-H.J.. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The author have declared that no competing interests exist.

Data availability: All of the data that support the findings of this study are available in the main text.

Ethical statement: No ethical statement was reported.

Funding: This study was self-funded by the authors.

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Painting Gallery

A male 秦灰蝶 *Qinorapala qinlingana* (Lycaenidae) is absorbing water from sandy mud
illustrated by Zhuo-Heng JIANG [蒋卓衡] (Kunming, China)